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(54) System for regulating the internal size of an helmet

(57) The invention concerns a system for regulating the internal dimension of an helmet (1) provided with a strap (2) arranged along at least a portion of a circumference laying on a plane substantially transversal to a user's head when the helmet is worn, restraining and guiding means (5,6a-6d,7a,7b) for said strap (2) along said circumference, a couple of tie rods (10a, 10b) whose length can be varied by means of a tightening device suitable for tightening or releasing said strap (2) varying therefore the area of the surface defined within said circumference.

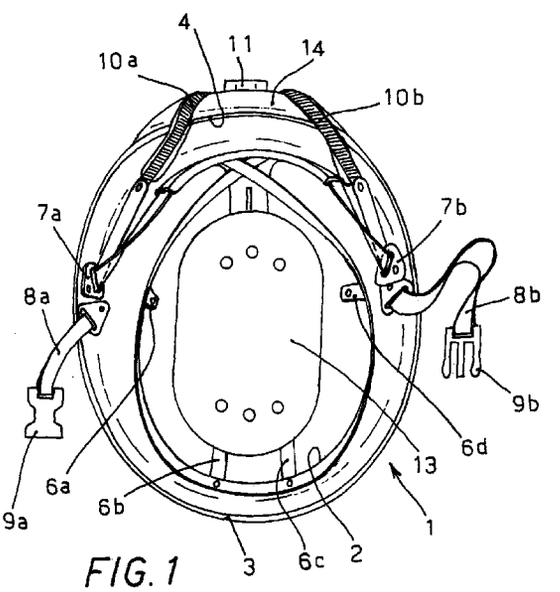

FIG. 1

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Description

[0001] The present invention refers to a system for regulating the internal size of an helmet.

[0002] More precisely, the invention relates to a system to be applied to an helmet or, alternatively, to be integrated in it, in order to adapt the internal size of the helmet modifying its internal circumference.

[0003] As it is well known, the helmets must be manufactured with different internal sizes in order to fit different head's sizes that can vary according to subjects and according to the age of the user.

[0004] In order to satisfy necessities of every user, reducing at the same time the production costs of the helmets, it is well known the use of different thickness padding made of foamed material covered with fabric to be inserted inside a plastic cap.

[0005] In this way, having some cap sizes, and for every cap's size, a plurality of internal padding having different thickness, it is possible to realise the whole range of sizes necessary to satisfy various user needs.

[0006] In order to solve the problem of firmly fixing an helmet on a user's head has been proposed the device described in the Italian patent application n.MI94A002374.

[0007] This device provides the use of a strap passing outside the helmet under the nape of the neck of the user and fixed to a tightening mechanism operable from outside the helmet.

[0008] According to the invention described in the aforesaid patent application the helmet provided with such a device can be secured to the user's head by tightening the strap by means of the tightening mechanism.

[0009] The above-mentioned device does not solve however the problem of how to modify the internal dimension of the helmet in order to adapt it to different size heads.

[0010] A first object of the present invention it is therefore to solve the aforesaid problem providing an internal size adjustment system for an helmet, of easy and cheap realisation, and that permits to realise helmets in a reduced number of sizes in order to cover the whole range of sizes necessaries to satisfy user needs.

[0011] The invention now will be described in detail with particular reference to the accompanying drawings given as non-limiting example in which:

Figure 1 is a bottom view of an helmet to which is applied the system according to the invention;
Figure 2 is a bottom perspective view of the helmet of Figure 1;
Figure 3 is a lateral view of the helmet of Figure 1;
Figure 4 is a back view of the container of the tightening mechanism;
Figure 5 is a perspective view from the inside of an helmet to which is applied the system according to the invention in an alternative embodiment;
Figure 6 is a lateral view of the helmet of Figure 5.

[0012] With reference to Figures 1 to 4 it is shown a helmet 1 to which is applied a system for regulating the internal size according to the invention.

[0013] The system according to the invention provides a strap 2 arranged into the helmet 1 between the padding (not shown) and the cap 3 in plastic material.

[0014] Said strap 2 is arranged into the helmet 1 along a path substantially circumferential in order to define a noose laying in a transversal plane as regards the user's head, in which the user's head will be inserted when the helmet is worn.

[0015] In correspondence with the back portion 4 of the helmet 1, said strap 2 has the respective extremities 2a and 2b crossed and passing inside a couple of guides 5a and 5b obtained in the arms of a flexible element 5 made of plastic material having a "Y" shape and having its foot 5c centrally fixed into the helmet 1 against the cap 3.

[0016] The strap 2 is moreover retained into the helmet 1, besides by means of the padding (not shown) which is applied on it, also by means of small straps 6a-6d fixed by sewing, gluing, rivets or others to the strap 2 and to the internal surface of the cap 3 of the helmet 1.

[0017] The fixing points of the foot 5c and of the small straps 6a-6d to the cap 3 are furthermore protected by a protective layer 13 interposed between the cap and the padding (not shown) provided in the helmet 1.

[0018] A couple of buckles 7a and 7b is provided inside the helmet 1, in correspondence with the fastenings for the chin-straps 8a and 8b in order to allow the extremities 2a and 2b of the strap 2 to be turned 180 degrees over towards the back portion 4 of the helmet 1.

[0019] The chin-strap 8a and 8b are moreover provided with a fastening clasp realised in two portions 9a and 9b that may be coupled by jointing.

[0020] Said extremities 2a and 2b of the strap 2 are fixed by sewing or rivets or other to a couple of tie rods 10a, 10b whose length can be varied operating on a windlass tightening mechanism controllable by means of a knob 11 provided with a releasing button 12.

[0021] By means of the knob 11 it is therefore possible to collect and release the tie rods 10a and 10b varying in this way the area of the surface included in the noose defined by the strap 2.

[0022] In this way the internal dimension of the helmet 1 can advantageously be varied to be adapted to a large number of users.

[0023] As it is better visible in Figure 3, the tightening mechanism is housed into a container 14 so shaped to adapt itself to the outer profile of the helmet's cap 3.

[0024] Said container 14 can be advantageously fixed to the cap 3 by means of rivets, screws, gluing or other and therefore can be applied to a helmet already made.

[0025] Alternatively, said tightening mechanism can be housed inside the cap 3 in a suitable housing.

[0026] According to the invention, the same helmet

could be adapted to different users included in a wide range of sizes.

[0027] With reference to Figures 5 and 6 it is shown a simplified embodiment of the regulating system according to the invention in which a strap 2' is passed through a plurality of loops 20a-20d provided inside the cap 3 in correspondence with the back portion 4.

[0028] According to this simplified embodiment of the invention, tightening or releasing the tie rods 10a, 10b, it is possible to vary the internal dimension of the helmet operating on the back portion of the internal circumference.

[0029] With reference again to Figure 4 and 5, the tightening mechanism is advantageously housed in a housing 14' provided integrated in the cap 3 of the helmet 1.

Claims

1. System for regulating the internal dimension of an helmet (1) provided with an outer cap (3) comprising:

   - a strap (2) arranged along at least a portion of a circumference laying on a plane substantially transversal to a user's head when the helmet is worn;
   - restraining and guiding means (5,6a-6d,7a,7b) for said strap (2) along said at least a portion of circumference;
   - at least a tie rod (10a, 10b) provided at at least one of the extremities (2a, 2b) of said strap (2) whose length can be varied by means of a releasing and collecting device, and suitable for tightening or releasing said strap (2) varying therefore the area of the surface defined within said circumference.

2. System according to claim 1, wherein said strap (2) defines a noose along said circumference.

3. System according to claim 1 or 2, wherein said restraining and guiding means (5,6a-6d,7a,7b) comprise a couple of buckles (7a, 7b) provided internally to the helmet (1) in order to allow the extremities (2a, 2b) of the strap (2) to be turned 180 degrees over towards the back portion (4) of the helmet (1).

4. System according to claim 3, wherein said buckles (7a, 7b) are fixed in correspondence of the fixing points for the chin straps (8a, 8b) for securing the helmet (1) on the user's head.

5. System according to claim 2, wherein said restraining and guiding means (5,6a-6d,7a,7b) comprise a couple of loops obtained in the arms (5a, 5b) of a flexible element (5) made of plastic material having a "Y" shape and having its foot (5c) centrally fixed against the cap (3) into the helmet (1).

6. System according to claim 2 or 5, wherein said restraining and guiding means (5,6a-6d,7a,7b) comprise a plurality of small straps (6a-6d) fixed to the strap (2) and to the internal surface of the cap (3) of the helmet (1).

7. System according to claim 1 or 3 when is dependent from claim 1, wherein said restraining and guiding means (5,6a-6d,7a,7b) comprise moreover a plurality of loops (20a-20d) arranged along said portion of circumference and fixed inside the cap (3) of the helmet (1).

8. System according to any of the preceding claims, wherein said releasing and collecting device comprises a windlass tightening mechanism provided with a knob (11).

9. System according to claim 8, wherein said windlass tightening mechanism is housed in a housing (14) fixed in the back of the helmet (1), externally to the cap (3).

10. System according to claim 8, wherein said tightening mechanism is housed in a housing (14') provided integrated in the back of the helmet (1) inside the cap (3).

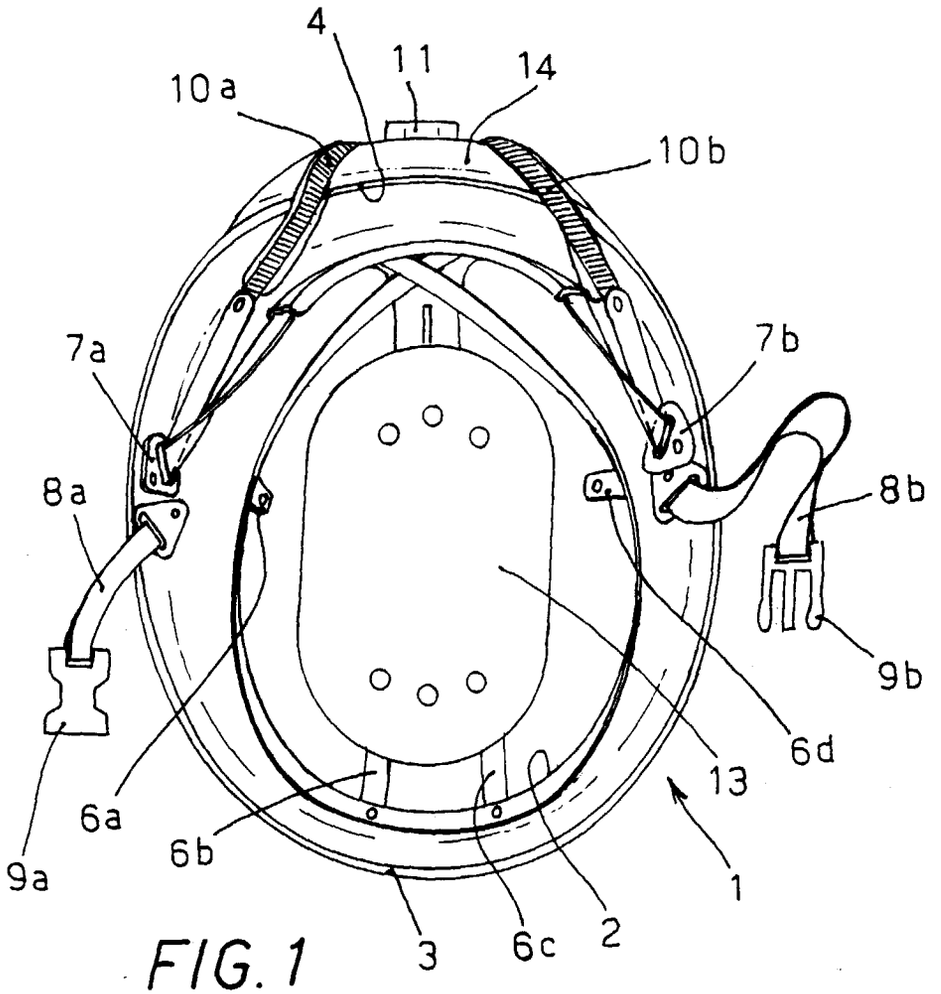
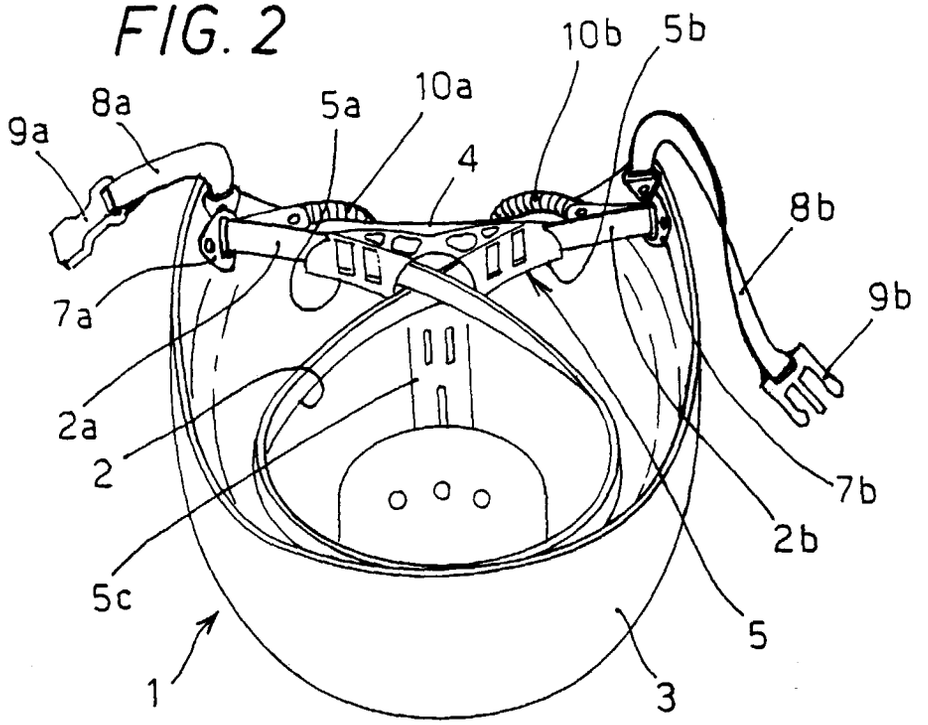

4
11
14
10a
10b
7a
7b
8a
8b
9b
9a
6a
6b
6c
6d
13
1
2
3

FIG. 1

FIG. 2


10b
5b
8a
5a
10a
9a
4
8b
9b
7a
2a
2
7b
2b
5c
5
1
3

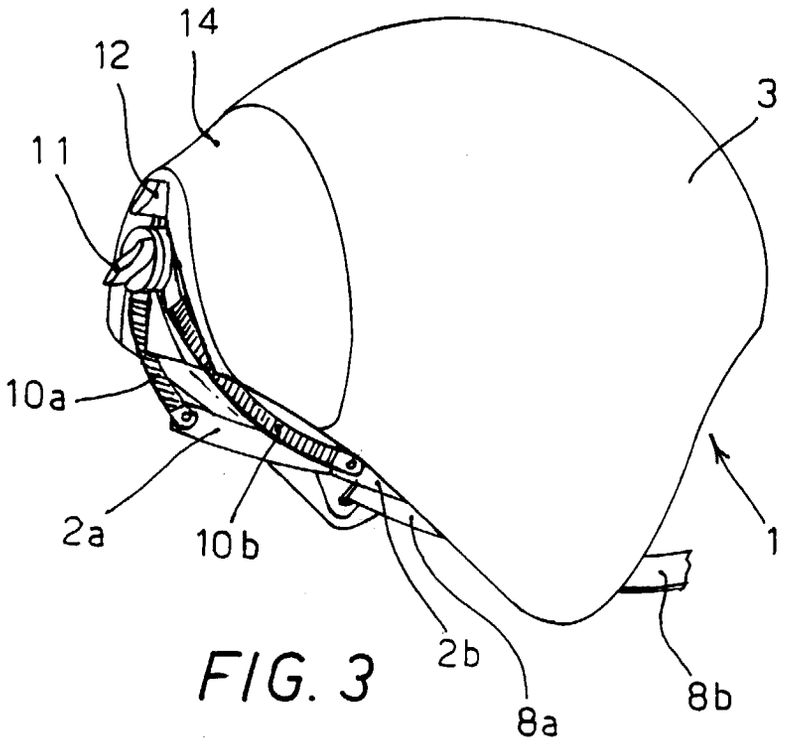


FIG. 3

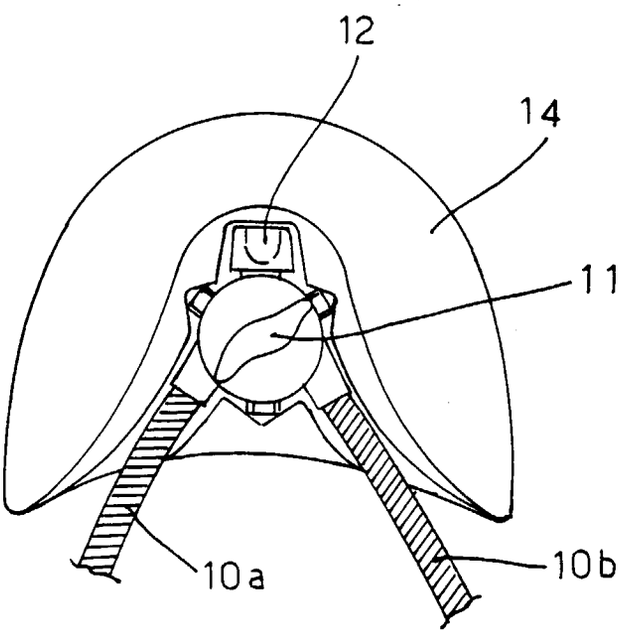
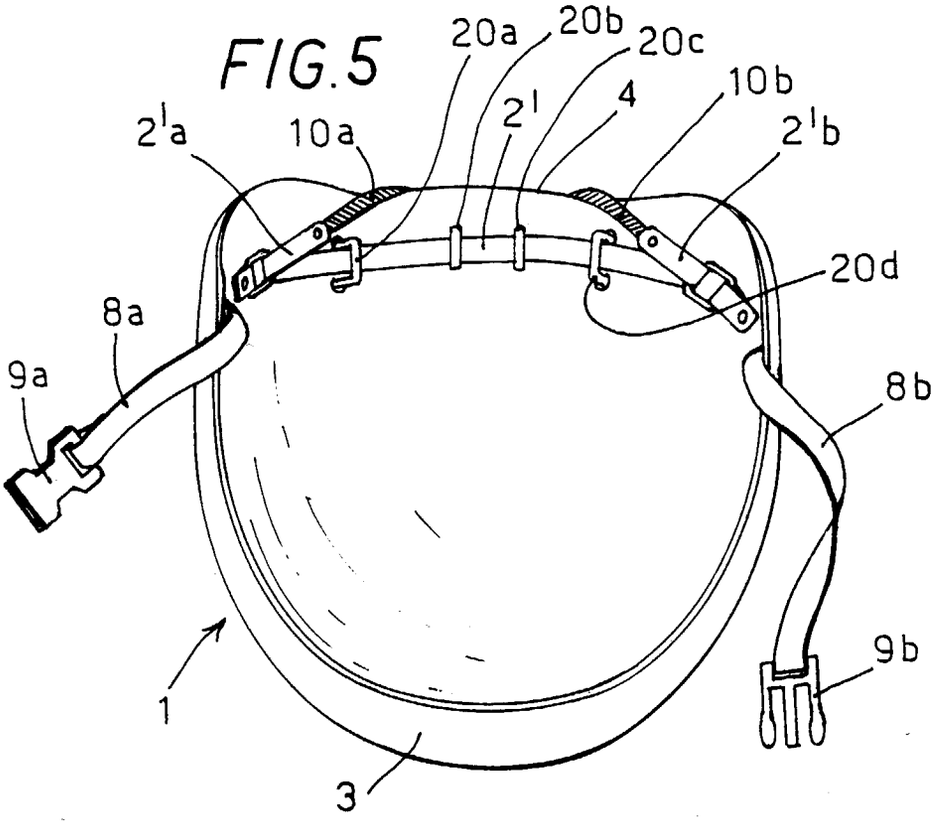


FIG. 4

FIG.5



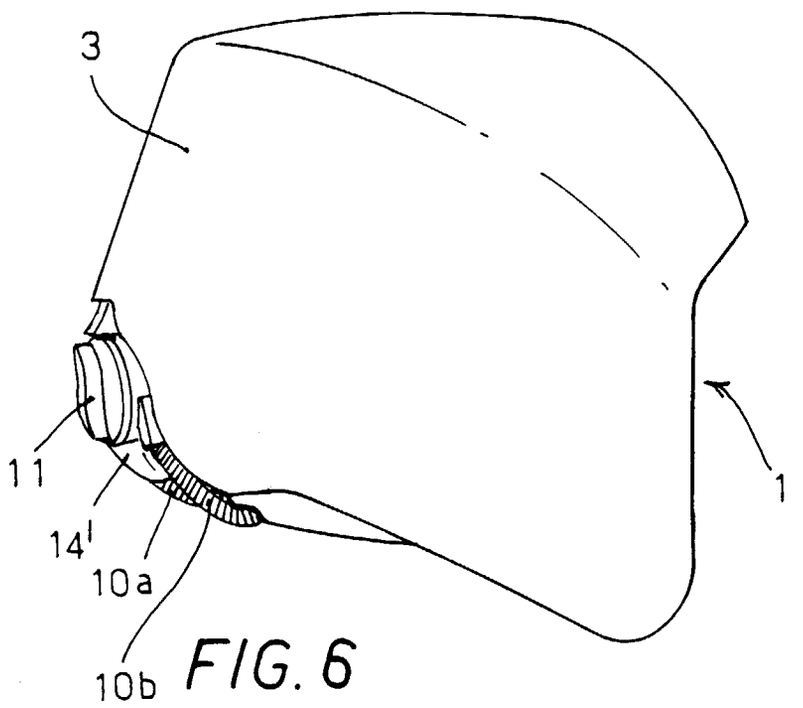


FIG. 6